

Union Pacific Railroad Statewide Railyard Agreement Technology Symposium How is Technology Proven Suitable/Durable? Sacramento, CA



June 10, 2009

Union Pacific System Overview



Fast Facts

• Miles of Track

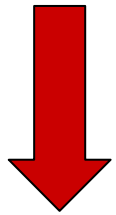
- 32,300 in 23 States
- 3,455 in California
- 1,272 in Los Angeles area

• Employees

- 50,000+ in US
- 5,900 in California

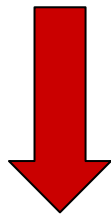
Emission Trends – Typical DPM Reductions from 2005 Baseline

- 2005 to 2007



DOWN +/- 25 to 35%

Projected to 2020



DOWN +/- 70 to 80%

UPRR is Reducing Emissions

**We need your help to identify
additional ideas for potential
emissions reductions**

**Result is the most comprehensive &
aggressive program of identification,
evaluation, development, acquisition,
deployment, optimization, & utilization
of new & evolving technologies of any
RR in No. America**

UP's "EPA" Locomotive Fleet

TOTAL

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	'00-'08
EPA Tier	0	0	1	1	1	2	2	2	2	
Switch New	0	0	0	0	0	11	51*	130*	4*	196
Switch Tier 0	0	0	35	90	81	84	73	65	80	508
Switch Retired	16	5	30	18	7	24	23	125	39	287
Road New	451	500	516	279	398	318	200	300	175	3,137
Road Tier 0	13	55	104	159	320	390	412	370	385	2,208
Road Retired	369	615	302	249	55	19	44	85	197	1,935
Idle Control	156	98	591	429	511	413	377	568	347	3,490

* New switchers are Ultra Low Emitting Locomotives; 13 acquired in 2006 were Tier 2

73% of the road units and 49% of the switchers were EPA certified by year-end 2008.

47% of the entire UP fleet had idle control devices by year-end 2008.

Criteria for Evaluation of Mitigation Measures...

- **Safe**
- **Technologically Feasible**
- **Consistent w/ Legal Requirements (i.e. – FRA)**
- **Operationally Feasible**
- **Cost Effective**
- **Other Yard Specific Considerations**

2008 Rulemaking - Technology

- **Very interactive process – all interests considered**
- **SIP needs vs. technological development**
- **Represents several challenging aspects**
 - **Retrofit Kits & new locomotives**
 - **Training**
 - **Parts compatibility - inventory**
 - **Consumables**
 - **Infrastructure**
 - **Cost**

Challenges for Each Road/Fleet

– Retrofit Kits

- Development of capability to comply w/ standards
- Testing/optimization of prototype(s) & pre-production
- Certification
- Replace vs. remanufacture locomotive

– New locomotive – above challenges plus

- Training of loco engineers, mtc personnel, etc.
- Consumables, infrastructure, & handling
- Deployment strategy – routes, train types, power, etc.
- Cost

Challenges for the Industry

- **Support network – location & use of ‘specials’**
- **Interchange between roads in US, Canada & Mexico**
- **Fuel penalty concerns**
- **Efficiency - moving 1 ton 830 miles w/ 1 gal fuel**
- **US & world economy**
- **RR's buy what is built & available**

THE ROAD TO THE FUTURE ISN'T A ROAD AT ALL.



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